DOLJAK, Marijan, ing.

Management. Produktivnost 3 no.6:417-424 Je '61.

1. Zavod za unpreidable rada, Zagreb.

DOLJAK, Marijan, inz.

Preparation of work in chemical industries. Kemija u industriji 11 no.4:175-180 '62.

1. Kemijska industrijska zajednica, Zagreb.

DOLJAK, Marijan, inz.

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1. Tajnik Drustva kemicara i tehnologa, Zagreb.

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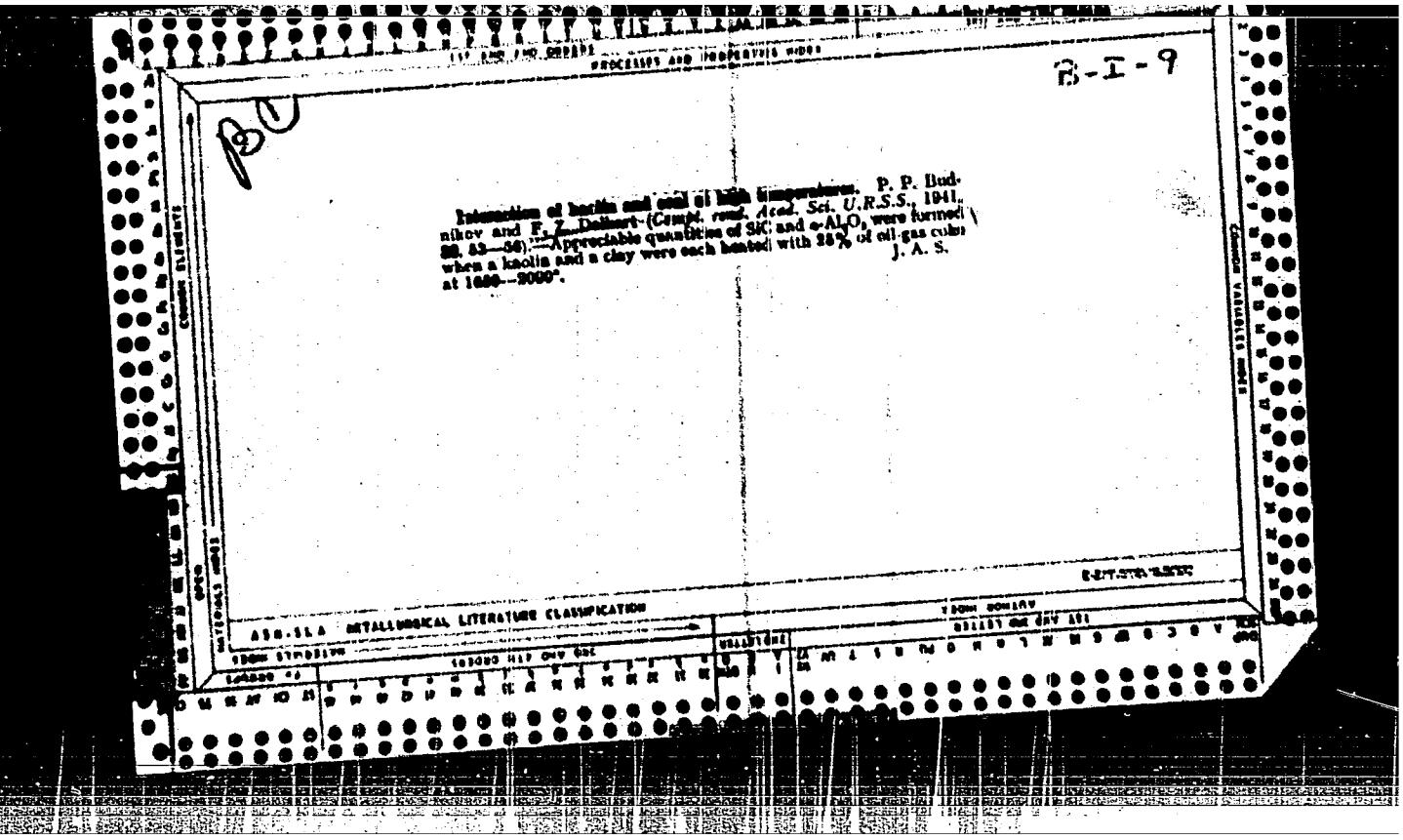
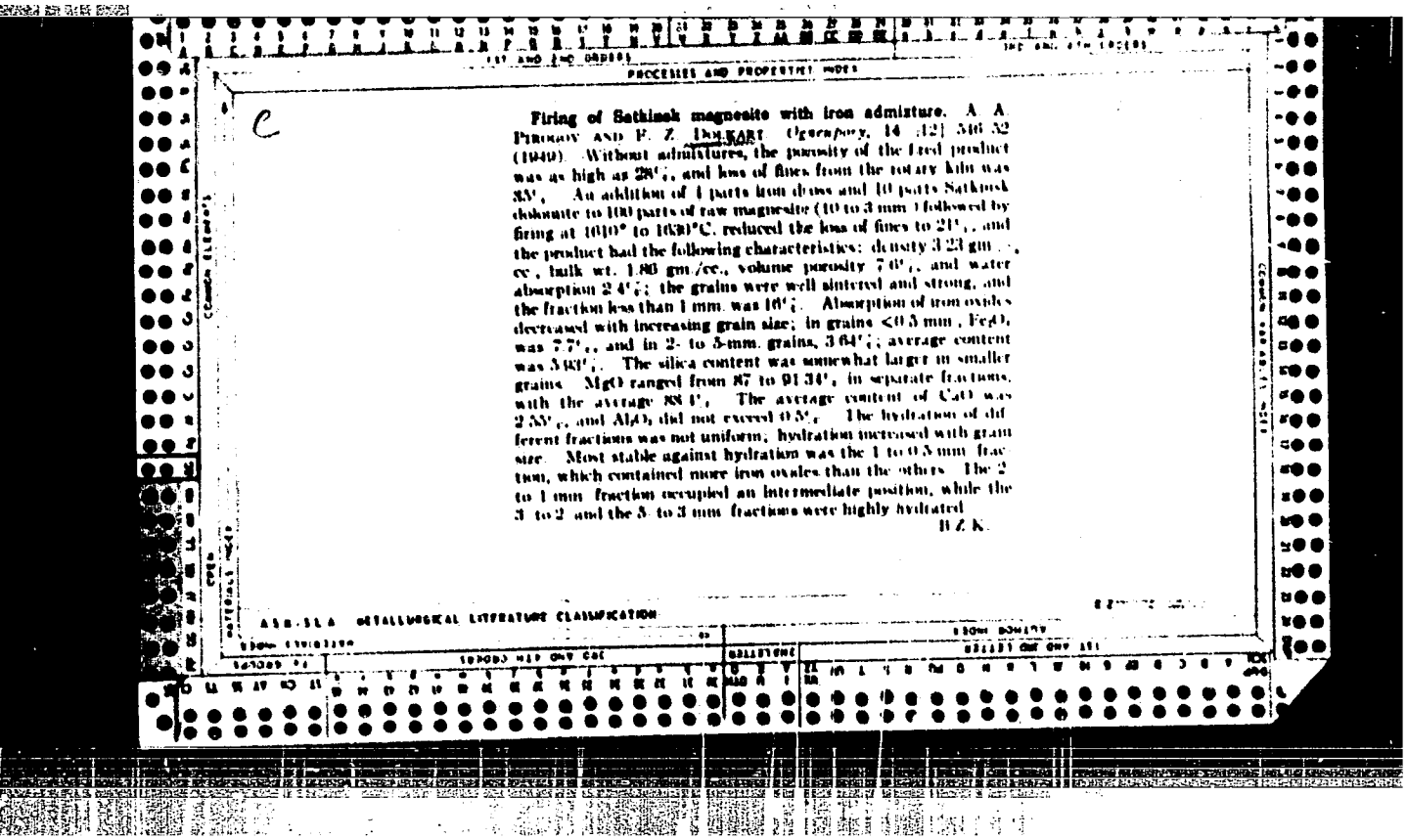


B-I-9

Interaction of kaolin and coal at high temperatures. P. P. Budnikov and F. Z. Dalkert. (Compt. rend. Acad. Sci. U.R.S.S., 1941, 30, 43—46). Appreciable quantities of SiC and α-Al_2O_3 were formed when a kaolin and a clay were each heated with 25% of oil-gas coke at 1650—2000°. J. A. S.

ASB.SLA METALLURGICAL LITERATURE CLASSIFICATION



Firing of Sathisk magnesite with iron admixture. A. A. PIROGOV AND P. Z. DEMART (*Ogneupory*, 14 [12] 546-52 (1949)). Without admixtures, the porosity of the fired product was as high as 28%, and loss of fines from the rotary kiln was 33%. An addition of 4 parts iron dross and 10 parts Satkinsk dolomite to 100 parts of raw magnesite (10 to 3 mm.) followed by firing at 1610° to 1630°C. reduced the loss of fines to 21%, and the product had the following characteristics: density 3.23 gm./cc., bulk wt. 1.80 gm./cc., volume porosity 7.0%, and water absorption 2.4%; the grains were well sintered and strong, and the fraction less than 1 mm. was 16%. Absorption of iron oxides decreased with increasing grain size; in grains <0.5 mm., Fe_2O_3 was 7.7%, and in 2- to 5-mm. grains, 3.64%; average content was 5.93%. The silica content was somewhat larger in smaller grains. MgO ranged from 87 to 91.34%, in separate fractions, with the average 88.4%. The average content of CaO was 2.55%, and Al_2O_3 did not exceed 0.5%. The hydration of different fractions was not uniform; hydration increased with grain size. Most stable against hydration was the 1 to 0.5 mm. fraction, which contained more iron oxides than the others. The 2- to 1 mm. fraction occupied an intermediate position, while the 5- to 2- and the 5- to 3 mm. fractions were highly hydrated.

H. Z. K.

SSR.

Increasing the life of refractory linings. F. Z. Dolkart and L. A. Tseitlin. *Mekh. Stantsii* 22, No. 12, 17-17 (1951).—The lining in the heating zone of boilers by using powd. coal or low-grade coal should use refractory materials of the highest quality, and should be replaced with a chromite mast.

H. Gottschalk

TSEYTLIN, L.A., kand. tekhn. nauk; DOLYART', F.Z., inzh.

Chromite ramming material. Ogneupory 18 no.5:199-207 My '53.
(MIRA 11:10)

1.Khar'kovskiy institut ogneuporov.
(Chromite) (Refractory materials)

Changes in the mineralogical composition of Ti-Al_2O_3 slag by calcination. P. P. [illegible] and N. V. [illegible]. *Doklady Akad. Nauk S.S.S.R.* 81, 137-9 (1951). *Chem. Abstr.* 4? (?) 206 c

— The slag investigated contained TiO_2 19.1?, SiO_2 2.??, [illegible] ?.?0, Fe_2O_3 0.49, CaO ?.41, MgO ?.?3, alkali 0.36 and ignition loss 1.36%. Slags of this type are produced in the Fe metallurgical processes, with 60 to 70% Al_2O_3 and about 20% TiO_2 as a form. They are composed chiefly of corundum and CaO $6Al_2O_3$; the corundum is usually pleochroic with greenish brown and blue colors, ω = 1.770 to 1.782, ϵ = 1.767 to 1.770. Evidently this corundum contains Ti_2O_3 in crystalline solution. Rutile and lower Ti oxides were confirmed by X-ray analysis. [illegible] and Rolren first observed that these slags undergo a characteristic change if heated to temperatures above 1450°C. in a slightly oxidizing atmosphere. In the present case, the compound $Al_2O_3 \cdot TiO_2$ appears in the calcination products in colorless crystals, with negative characteristics of elongation and γ = 1.04, α = 2.0?. The color change from black to pale green starts above 800° but is complete only at the highest temperatures (1600°). The reaction is combined with a weight increase caused by the oxidation of the lower Ti oxides to rutile; the density is decreased slightly (from 3.78 to 3.72). If the calcination is made in a reducing atmosphere, no change is observed. Slags of this type are useful only as additions to mixes of refractory and magnesite brick.

SOV/137-58-10-20604

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 38 (USSR)

AUTHOR: Dolkart, F.Z.

TITLE: Making Magnesite Tuyeres (Izgotovleniye magnezitovykh furm)

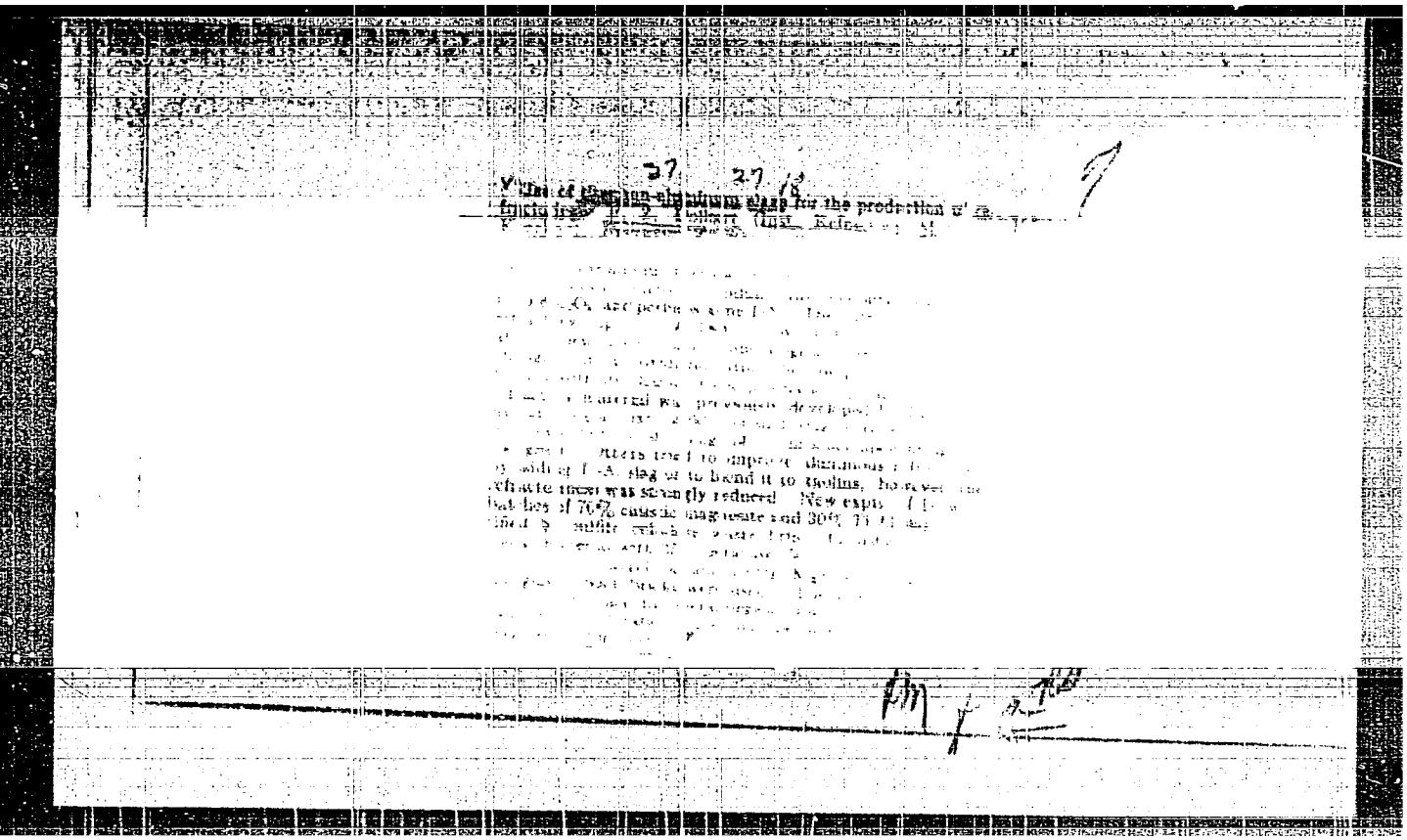
PERIODICAL: Byul., nauchno-tekhn. inform. Vses. n.-i. in-t ogneuporov, 1956, Nr 1, pp 120-123

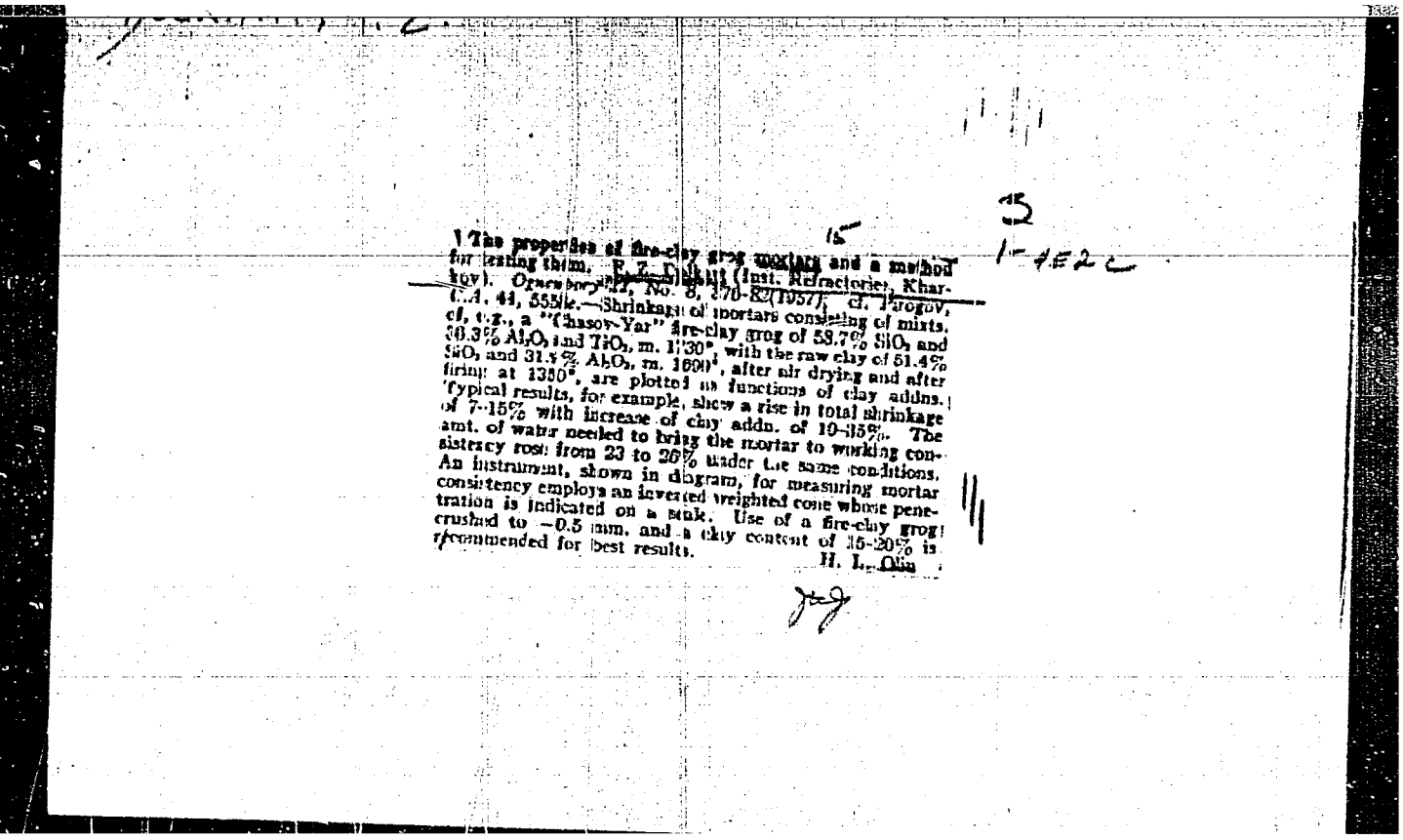
ABSTRACT: Tuyeres 350 and 580 mm long of 16.4-17.3% apparent porosity and 2.8-2.9% g/cm^3 volumetric weight for converters operated with O_2 blow are made of bulk magnesite containing 29% <0.088-mm fraction, 18% 0.5-0.088-mm fraction, and 53% 2-0.5-mm fraction, made in mixer-crushers. The location of the magnesite tuyeres in the furnace and the conditions under which they are burned in are stated.

Ya.G.

1. Furnaces--Equipment 2. Nozzles--Production 3. Magnesite --Applications

Card 1/1





The properties of fire-clay grog mortars and a method for testing them. R. Z. Dolgikh (Inst. Refractories, Kharkov). *Ogneupory* 22, No. 8, 370-82(1957); cf. Trogov, *cf*, C.A. 44, 555*i*.—Shrinkage of mortars consisting of mixts. of, e.g., a "Chasov-Yar" fire-clay grog of 58.7% SiO_2 and 30.3% Al_2O_3 and TiO_2, m. 1730°, with the raw clay of 51.4% SiO_2 and 31.4% Al_2O_3, m. 1690°, after air drying and after firing at 1350°, are plotted as functions of clay addns. Typical results, for example, show a rise in total shrinkage of 7–15% with increase of clay addn. of 10–15%. The amt. of water needed to bring the mortar to working consistency rose from 23 to 26% under the same conditions. An instrument, shown in diagram, for measuring mortar consistency employs an inverted weighted cone whose penetration is indicated on a scale. Use of a fire-clay grog crushed to −0.5 mm. and a clay content of 15–20% is recommended for best results.

H. L. Olin

DOLKART, F.Z.

AUTHORS: Dolkart, F. Z. , Kuz'mina, L. A. 131-1-10/14

TITLE: On the Presence of Bicalcium-Silicate in the Disintegrated Samples of Fettling in an Open-hearth Furnace.
(O prisutstvii dvukhkal'tsiyevogo silikata v rassypavshikhsya probakh navarki podiny martenovskoy pechi)

PERIODICAL: Ogneupory, 1958, Nr 1, pp. 41 - 42 (USSR)

ABSTRACT: The quality of the powders for repairing the basic furnace bottoms of Siemens-Martin furnaces to a considerable degreee depends on their content of silicon dioxide. An excess of it promotes the development of softend places which may lead to a progressing disturbance of furnace-bottom work. In case that silicon dioxide with calcium oxide forms the bicalcium-silicate ($Ca_2 SiO_4$) the latter , when the furnace bottom is cooled below 675°C, may lead to the destruction of the built-up welding due to the modificatory conversion of the β-form to the γ-form. This destruction may take place at a 2% content of bicalcium-silicate. Further the investigation of samples is described which were taken from the furnace bottom of a Siemens-Martin furnace for the purpose of studying their magnesite built-up welding. Several of these sample which were taken from a depth of 40 - 80 mm disintegrated in the course

Card 1/3

On the Presence of Bicalcium-Silicate in the Disintegrated Samples of Fettling in an Open-hearth Furnace.

of half an hour and were converted to powder; the samples considerably differed from each other in their chemical composition, as is to be seen from the table. The petrographic investigation showed that the samples macroscopically represented a gray powdery mass in which individual solid pieces up to a dimension of 20 mm occur. The microscopic inspection of the samples showed that they consist of the following components: calcium ferrites, γ-bicalcium-silicate, periclase and β-bicalcium-silicate. Then the individual components are described in detail. In some grains of bicalcium-silicate a partial transition of the β-form to the γ-form is to be observed (figures 1 and 2). Both modifications of bicalcium-silicate, as well as the grains, in which a transition from the β- to the γ-form is to be observed, exist in the samples for a long time. This may be explained by the stabilizing influence of iron oxides present in the built-up welding. It is considered indispensible that progressive methods of repairing furnace bottoms are everywhere introduced by using iron waste instead of quartz sand, as well as in the capacity of sintering admixture (instead of Martin slag which contains much silicon dioxide). There are 2 figures, 1 table, and 5 references, all of which are Slavic.

131-1-10/14

On the Presence of Bicalcium-Silicate in the Disintegrated Samples of Fettling in an Open-hearth Furnace Bottom in a Siemens-Martin Furnace

ASSOCIATION: Institute for Refractory Materials Khar'kov (Khar'kovskiy institut ogneuporov)

AVAILABLE: Library of Congress

1. Furnaces-Maintenance

Card 3/3

SOV/131-58-7-2/14

AUTHORS: Dolkart, F. Z., Kotik, P. L., Zayonts, Ye. L., Onishchenko, P. V.

TITLE: The Production and the Test of the Metallurgical Dolomite of the Raw Material of the Shchelkovskoye Deposit During Operation (Izgotovleniye i ispytaniye v sluzhbe metallurgicheskogo dolomita iz syr'ya shchelkovskogo mestorozhdeniya)

PERIODICAL: Ogneupory, 1958, Nr 7, pp. 292 - 298 (USSR)

ABSTRACT: The Moscow Metallurgical Works "Serp i molot", "Elektrostal", New Tula Plant and others use dolomite of the Shchelkovskoye deposit after it had been fired in cupola kilns. The Council of National Economy of the Moskovskaya Oblast approved of the project for the construction of a department for the firing of dolomite at the Shchelkovskoye deposit with an annual output of 90,000 tons. In connection with this problem, a test charge of metallurgical dolomite, according to the technological scheme as shown in Fig 1, was produced by the Nikitovskiy dolomite plant. . The following specialists took part in this work: P. D. Orekhov, Ye. S. Zil'berg, S. Ye. Berinskaya and M. F. Tulyakova (Ref 1). The chemical composition of the raw

Card 1/4

The Production and the Test of the Metallurgical Dolomite of the Raw Material of the Shchelkovskoye Deposit During Operation

dolomite used can be seen in table 1. Three samples of raw dolomite are shown (Fig 2); these samples were used by P. G. Pyatikop for petrographic investigations and were then described in detail. The granulation of the raw dolomite can be seen in table 2. The dolomite was fired in a rotating kiln according to the dry process. The chemical composition and granulation of the fired test dolomite are given (Figs 3 and 4). The comparison of the data of tables 3 and 1 is shown in table 5. Fig 3 shows the broken pieces that had been welded together of fine dolomite. The experimental dolomite produced this way is to be classified as class 1 and 1 is shown lurgical dolomite, according to ChMTU 10018-54 for fired metal- Its investigation was carried out at the "Serp i molot" works with P. Ya. Barzdayn, A. A. Lobed'kov, P. I. Mel'nikov, O. I. Yatsunskaya, G. V. Sviridov, A. A. Yegorov and A. I. Alekseyev (Ref 3) taking part in this investigation. The experimental dolomites were tested in Martin furnaces with a capacity of 70 tons. The chemical composition of the dolomite fired in the cupola kilns is shown (Table 6). The chemical composition granulation of the metallurgical experimental dolomite

The Production and the Test of the Metallurgical Dolomite of the Raw Material of the Shchelkovskoye Deposit During Operation

are mentioned (Table 7) and the experimental dolomite fired in the rotating kilns is shown (Fig 4). The same dolomite fired in cupola kilns is shown as well (Fig 5).

Conclusions: 1) The dolomite of the Shchelkovskoye deposit can be fired in the dry process in rotating kilns without additions; thus a metallurgical dolomite is produced which meets technical demands. 2) It is recommended to fire the dolomite separately according to fractions. 3) Tests in the "Serp i molot" works carried out with it proved its usefulness. 4) The construction of a firing plant at the Shchelkovskoye deposit must be accelerated in order to replace the magnesite powder used until now. This way also the demands of the Cherepovets metallurgical works could be met. 5) The production costs at the Shchelkovskoye deposit were estimated to be much lower than is the case at the Nikitovkiy and Yamskiy dolomite Kombinats. There are 5 figures and 7 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov (All-Union Scientific Research Institute of Refractories)

SOV/131-58-7-2/14

The Production and the Test of the Metallurgical Dolomite of the Raw Material of the Nikitovskiy Deposit During Operation

Nikitovskiy dolomitnyy kombinat
(Nikitovskiy Dolomite Kombinat)

1. Dolomite---Metallurgy 2. Dolomite---Properties 3. Minerals---Chemical analysis

Card 4/4

SOV/133-58-7-6/27

AUTHORS: Dolkart, F.Z., Semenenko, P.P., Slesarev, S.G. and Fadeyev, I.G.

TITLE: The Use of Martenite for Repairs of the Bottom of Open-hearth Furnaces (Primeneniye martenita dlya remonta podin martenovskikh pechey)

PERIODICAL: Stal', 1958, Nr 7, pp 604 - 606 (USSR)

ABSTRACT: In conjunction with the beginning of production of martenite on the "Magnezit" works, its suitability for repairs of open-hearth bottoms was tested as since previous tests in 1946-1947, operating conditions of open-hearth furnaces have changed (intensification of the smelting process). The tests were carried out on the Serov Works on 135-ton furnaces with magnesite-chromite and mixed roofs, fired with a carburised mixture of blast-furnace and brown coal-producer gas, operating the scrap ore process with 55-60% of hot pig. Usually, repairs of bottoms were done every 8 days. Chemical composition and size distribution of the martenite used for the tests - Table 1, and data on the tests - Table 2. A comparison of the chemical composition of sintered samples, taken from furnace bottoms, repaired with martenite and with a magnesite open-hearth slag

Card1/2

The Use of Martenite for Repairs of the Bottom of Open-hearth Furnaces

mixture - Table 3. The use of martenite decreased by 0.7% the time required for repairs due to a faster sintering of the second layer, as martenite sinters approximately twice faster than the usual mixture of magnesite with slag. The results obtained were satisfactory. For further improvement of martenite, a decrease in its silica content and an increase in magnesia content is recommended. There are 3 tables and 3 Soviet references

ASSOCIATION: Vsesoyuznyy institut ogneuporov i metallurgicheskiy kombinat im. Serova (All-Union Refractory Institute and Metallurgical Combine imeni Serov)

1. Open hearth furnaces--Maintenance 3. Martensite--Applications

AUTHORS: Dolkart, F. Z., Kulik, A. I., Salganik, L. D. 131-23-5-5/16
Skripnik, G. N.

TITLE: Experiment in Manufacturing Magnesite Bricks in the Chasov-Yarskiy Plant imeni Ordzhonikidze (Opyt izgotovleniya magnezitovogo kirpicha na Chasov-Yarskom zavode imeni Ordzhonikidze)

PERIODICAL: Ogneupory, 1958, Vol. 23, Nr 5, pp. 210-216 (USSR)

ABSTRACT: Ya. L. Rigberg, A. V. Drazhnikova, V. A. Litvinskiy (deceased), T. S. Karmanova, M. P. Peresada, N. D. Tsepin, V. Ya. Miroshnichenko, A. D. Kulakova, A. V. Zatula participated in these tests. The results are of interest as a mass preparation without deposit, pressing of the unfinished pieces on mechanical presses, and burning in the tunnel kiln is not used in the "Magnesit", which manufacture magnesite bricks. In the first stage of the experiment (figure 1) magnesite powder of two types was used: MK of 60-70% fraction under 0,5 mm and another type of 30-35% fraction under 0,5 mm. The chemical composition of these two kinds of powder can be seen in table 1 and the characteristic of the masses in table 2. Furthermore the pressing drying and burning of the unfinished pieces is described. In figure 2 the way of inserting the unfinished pieces for burning is shown and in table 7 (lorries n. 1 to 4) the

Card 1/3

Experiment in Manufacturing Magnesite Bricks in the Chasov..
Yarskiy Plant imeni Ordzhonikidze

131-23-5-5/16

peratures. By high shrinkage (table 3) a considerable waste occurred. The chemical composition and properties (table 4) corresponded to the conditions GOST 46-89-49 with the exception of the deformation temperature under stress. In order to improve the quality of the bricks a magnesite mass with a definite content of the fraction o,5-o,88 mm was used, the characteristic of which can be seen in table 5. As these bricks did not fully correspond to the GOST standards, in the second stage of experiment masses were used, the moisture content and granulation of which are mentioned table 6. The unfinished pieces were burnt under a temperature regime which can be seen from table 7 (lorries 6,7 and 8). The way of inserting the unfinished pieces is shown in figures 3 and 4. The shrinkage during the burning is quoted in table 8 and the chemical composition as well as the properties of the burnt bricks in table 9. 96% bricks of first choice and 4% of second choice were obtained. Fihal conclusions:

1) By pressing on mechanical presses under a specific pressure of 5oo-1ooo kg/cm^2 and a course containing ~50% magnesite of the fraction 2-o5mm and 3o - 35% of the fraction below o.o88 mm products can be obtained which correspond to

Card 2/3

Experiment in Manufacturing Magnesite Bricks in the Chasov-Yarskiy Plant imeni Ordzhonikidze 131-23-5-5/16

with regard to volumetric weight.
2) Burning the unfinished magnesite pieces with a moisture content below 1% can be carried out in the tunnel kiln under the regime of burning magnesite-, chromite- as well as chromomagnesite-, bricks. By economical insertion of the uhfinished pieces the waste can be considerably reduced. In order to obtain good results in the manufacture without mass storage a well sintered magnesite powder with a minimum content of calcium oxide must be used. There are 4 figures, 9 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov (All-Union Scientific Research Institute of Refractory Products); Chasov-Yarskiy zavod imeni Ordzhonikidze (Chasov-Yarskiy Plant imeni Ordzhonikidze)

AVAILABLE: Library of Congress

Card 3/3

1. Refractory materials - Production methods 2. Magnesite - Applications

15 (2)

AUTHOR: Dolkart, F. Z.

TITLE: Forsterite Bricks With Siphons

SOV/131-59-10-4/10

PERIODICAL: Ogneupory, 1959, Nr 10, pp 448-452 (USSR)

ABSTRACT: A set of these bricks was baked by the UNIIC Test Plant. Dunite from the Uktusskoye deposit, baked at 1450°, and raw olivenite from the Khabozerskoye deposit served as initial materials, the characteristics of which are shown in table 1. Table 2 contains the composition of the experimental charges, and table 3 gives that of the forsterite mass. Figure 1 illustrates the method of pressing bricks with siphons. The dried blanks with a moisture content of 1% approximately were baked at 1600°. Table 4 and figure 2 show the properties of bricks with siphons, and forsterite bricks with siphons are presented in figure 3. The test specimens were tested by the Khar'kov Works for Transportation-machine Building and the Dnepropetrovsk Metallurgical Works. V. A. Ustichenko, S. Ya. Gurevich, I. I. Sheyko, N. G. Velichko, I. I. Polikarpov, Yu. I. Bembinek, S. I. Belokurov, S. I. Stupel', B. G. Layko, A. N. Kravchenko, and V. L. Timofeyev participated in the tests. Casting temperature and a description of the cast blocks are given in

Card 1/2

Forsterite Bricks With Siphons

table 5. Conclusions: It was demonstrated that it is possible to produce bricks with siphons from forsterite mass by the half-drying process. The bricks can be pressed on the SM-143 press and on that suggested by VIO. Comparative tests should be made between forsterite bricks with siphons and fire-clay and semiacid bricks with siphons. There are 3 figures, 5 tables, and 10 Soviet references.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute for Refractories)

Card 2/2

15(2)

AUTHORS: Dolkart, F. Z., Bernshteyn, A. M., Cherushev, V. Ye.

SOV/131-59-2-10/1

TITLE: Bilateral Pressing With a Friction Press (Dvustoronneye pressovaniye na friktsionnom presse)

PERIODICAL: Ogneupory, 1959, 24 Nr 2, pp 85-86 (USSR)

ABSTRACT: In the case of unilateral pressure of friction presses the pressed piece has different densities with respect to its length. In the case of longer pressed pieces the density is considerably smaller in the lower part than in the upper one. At the suggestion of A. M. Bernshteyn and V. Ye. Cherushev bilateral pressing is done at the Experimental Plant of the Ukrainskiy institut ogneuporov (Ukrainian Institute of Refractories) with the friction press "Tagilets" by means of a lever apparatus (8), as may be seen from the scheme. The device and its working method are described in detail. There is 1 figure.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute for Refractories)

Card 1/1

PIROGOV, A.A.; DOLMART, F.Z.

Properties of magnesian rammed linings of hearth bottoms of electric steel smelting furnaces. Ogneupory 25 no. 3:114-122 '60. (MIRA 13:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov. (Refractory materials) (Electric furnaces)

DOLKART, F.Z.; KUZ'MINA, L.A.

Investigating the used-up foresterite runner bricks. Ogneupory 25 no.10:474-477 '60. (MIRA 13:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov. (Firebrick)

DOLKART, F.Z.; USTICHENKO, V.A.

Combined batch for dolomite and dolomite-magnesite refractories with free lime. Ogneupory 25 no.11:523-525 '60. (MIRA 13:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov. (Firebrick) (Binding materials)

DOLKART, F.Z.

Improve methods for controlling the quality of raw material and finished products. Ogneupory 26 no.6:293-294 '61. (MIRA 14:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov. (Refractories industry—Quality control)

DOLKART, F.Z. Prinimal uchastiye USTICHENKO, V.A.

Characteristics of refractory materials made of calcined dolomite on a resin base. Ogneupory 26 no.7:329-335 '61. (MIRA 14:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Dolomite)
(Refractory materials)

SIDOROV, Viktor Ivanovich, inzhener; DULKART, Gershin Shliomovich, inzhener; KARAMYSHEV, I.A., inzhener, redaktor; KHITROV, P.I., tekhnicheskiy redaktor

[Railroad structures of precast reinforced concrete and large wall blocks] Zheleznodorozhnye zdaniia iz sbornogo zhelezobetona i krupnykh stenovykh blokov. Moskva, Gos. transp. zhel-dor. izd-vo, 1956. 134 p.
(Precast concrete construction) (MLRA 10:2)
(Railroads—Buildings and structures)

ASM
Dolkart, I. S.

D

293-D. (Russian.) The Operation of Jets in Openhearth Furnace Using Hot Compressed Air. I. S. Dolkart. *Za Ekonomiiu Topliva*, v. 9, Apr. 1953. p. 13-14.

Savings made by using hot compressed air and petroleum residue in openhearth furnaces. (D2, ST)

AL'TMAN, L.P.; DOLKART, M.L.

Economic relations of the northwest of the U.S.S.R. and their improvement. Vest. LGU 19 no.18:57-62 '64.

(MIRA 17:11)

DOLKART, P.S., inzh.

Organizing the pouring of fill in bogs of considerable xtent.
Transp. stroi. 14 no.8:7-9 Ag '64.

(MIRA 18:1)

BELYNSKIY, V.V., inzh.; DOLMART, V.M., inzh.; KAGAN, B.M., kand. tekhn. nauk; LOPATO, G.P., inzh.; MATYUKHIN, N.Ya., inzh.; ERUK, I.S., red.; MORDVINOVA, N.P., inzh., ved. red.; SHTEYNBOK, G.Yu., inzh., red.; POMICHEV, P.M., tekhn. red.

[Small M-3 electronic computer] Malogabaritnaia elektronnaia vychislitel'naia mashina M-3. Moskva, Filial Vses. in-ta nauchn. i tekhn. informatsii, 1957. 86 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt, tema 40) (MIRA 14:11)

1. Chlen-korrespondent AN SSSR (for Bruk).
(Electronic calculating machines)

BRUK, I.S.; MATYUKHIN, N.Ya., inzh.; BELYNSKIY, V.V., inzh.; IOSIF'YAN, A.G., akademik; KAGAN, B.M., kand.tekhn.nauk; DOLKART', V.M., inzh.; LOPATO, G.P., inzh.

M-3 small-sized universal electronic digital computer. Elektrichestvo no.1:49-54 Ja '58. (MIRA 11:2)
(Electronic calculating machines)

VOLKART, V.M.

PHASE I BOOK EXPLOITATION SOV/4411

Konferentsiya po voprosam teorii i primeneniya diskretnykh avtomaticheskikh sistem, Moscow, 1958

Teoriya i primeneniye diskretnykh avtomaticheskikh sistem; trudy konferentsii (Theory and Application of Discrete Automatic Systems; Transactions of the Conference) Moscow, AN SSSR, 1960. 572 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Natsional'nyy komitet SSSR po avtomaticheskomu upravleniyu. Institut avtomatiki i telemekhaniki.

Editorial Board: M.A. Gavrilov, Doctor of Technical Sciences, Yu.V. Dolgolenko, Doctor of Technical Sciences, V.A. Kotel'nikov, Candidate of Technical Sciences, A.Ya. Lerner, Doctor of Technical Sciences, I.S. Morosanov (Scientific Secretary), G.S. Pospelov, Doctor of Technical Sciences, A.A. Fel'dbaum, Doctor of Technical Sciences, A.V. Khramoy, Candidate of Technical Sciences, and Ya.Z. Tsypkin, Doctor of Technical Sciences; Resp. Ed.: Ya.Z. Tsypkin, Doctor of Technical Sciences; Ed. of Publishing House: M.L. Podgoyetskiy; Tech. Ed.: S.G. Markovich.

PURPOSE: These transactions are intended for the members of the conference and other specialists in automatic control.

COVERAGE: The Conference on the Problems of Theory and Application of Discrete Automatic Systems took place in Moscow from September 22 to 26, 1958. It was the first conference devoted to discussions of the present status of the theory and techniques of discrete automatic systems and to planning for future development. The papers discussed at the conference have been divided into four groups. In the first group optimization switching circuits are discussed as well as methods of relay control systems, in particular plant lag control systems in which are realized optimal processes as to quick response. The second group of papers is devoted to the analysis and synthesis of pulse systems with variable parameters, of pulse systems with several pulse components, to the study of self-oscillation phenomena in nonlinear pulse systems, and to the methods of calculating linear pulse systems. Problems of simulating pulse-systems and descriptions of some pulse regulators have also been included. The third group of papers deals with digital systems. Problems of using elements of digital technique and digital computers for the automation of various fields of engineering, i.e., power engineering, mining, radio communication, metallurgy, etc., are discussed. Problems of analog-digital conversion and vice versa as well as problems of developing specialized functional converters have been included in this group. The fourth group of papers includes theoretical elements and certain practical applications of the simplest types of self-adjusting systems, optimalizing control systems, which are developed as relay, pulse and digital devices. Here are also found papers describing various methods of investigating steady state conditions in optimalizing systems, results of studying the effects of random factors on the process of automatic scanning, and examples of existing optimalizing control systems. Some of the more interesting communications and observations made during the discussion of the various conference papers have also been included in the Transactions. Personalities and references accompany most of the papers.

DOLKART, V.M. [translator]; NOVIK, G.Kh. [translator]; LYUBCHENKO, V.K. red.; NIKULIN, S.M. red.; VOLKOVA, I.M., red.; SMUROV, B.V., tekhn. red.

[Use of transistor and magnetic elements in electronic digital computers] Primenenie tranzistornykh i magnitnykh elementov v tsifrovykh vychislitel'nykh mashinakh; sbornik statei. Pod red. V.K.Liubchenko i S.M.Nikulina. Moskva, Izd-vo "Sovetskoe radio," 1960. 228 p. (MIRA 14:10)

(Electronic digital computers)

16.8000 (1121, 1132, 1329)

27979
S/194/61/000/004/011/052
D249/D302

AUTHORS: Kagan, B.M., Dolkart, V.M., Voitelev, A.I. and Brudnyy, B.P.

TITLE: A complex digital computer installation for investigating processes occurring in control systems with digital control machines

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 4, 1961, 21, abstract 4 B160 (V sb. Teoriya i primeneniye diskretn. avtomat. sistem, M., AN SSSR, 1960, 288-295)

TEXT: A description is given of a complex computer installation comprising the general purpose computer type M-3, general purpose electronic computer type MN-8(MN-8), and a two-way data converter for the analog and digital forms of information. The installation is intended for simulating complex automatic systems, consisting of a controlled object (analog part) and a controlling digital ma-

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A complex digital computer...

chine. In an exploratory system comprising a closed circuit, the object and the digital machine are tied together by means of the digital-analog and analog-digital converters. In this system the task of the digital machine is to process the object's output measured at some instant of time, and to prepare the instructions which are then sent to the object via converters. It is assumed that after having received the data from the object, the digital machine continues to process the data for a certain defined time interval after which, it suddenly changes its output control instructions. Then begins the "control cycle", at the end of which a new reading is taken from the object and a new computing cycle is initiated by the digital machine. In the present complex installation the object is simulated by the installation MN-8 and the function of the calculating machine is performed by the installation M-3. It may be noted that in general there exist three different operating conditions for the kind of installation considered. If the digital computer has the same speed of functioning as the analog computer, the operation is carried out in the real time scale If the speed

4+

A complex digital computer...

of the digital computer is low, the time scale of the MN-8 can be adjusted. Finally, if the required adjustment of the time scale is technically impossible, the analog computer can be made to operate with the intermission of solution. For the present installation the second type of operation has been selected. This type of operation has been selected. This type of operation permits in particular the use of only one analog-digital and one digital-analog converter, since individual translations can be performed and stored in a sequential manner. Converter connection to an arbitrary channel of a variable is effected by means of a special switch based on the step selector, type [illegible] (ShI)25/8. The analog-digital converter (voltage binary code) utilizes the principle of the "balancing currents" in a circuit with feedback, and has seven binary divisions. For the reverse translation, the current addition circuit in the decision unit is used. In order to enable the use of the computer M-3 in the present installation, two operations had to be added to it, viz., "direct translation" and "reverse translation". In the address part for this instruction, the address of the subsequent

Card 3/4

A complex digital computer...

instruction is given together with the address of the cell to which the converted number should be sent, or from which a number to be converted should be taken. By using this instruction the control is effected of not only the converter, but also of channel switching and the corresponding switching in the computer itself. The combined analog-digital computing installation can be put to the dual purpose of solving mathematical problems and producing synthesis of the optimum conditions for adjustment and control systems. 1 reference. [Abstracter's note: Complete translation]

4+

Card 4/4

GLOTOV, V.G., inzh.; DOLKART, V.M.

Pulsed imagnetic polarity reversal of ferrites with rectangular hysteresis loops. Vest.elektroprom. 31 no.3:19-25 Mr '60. (MIRA 13:6)

(Ferrates)

ACCESSION NR: AP4041574 S/0292/64/000/007/0004/0010

AUTHOR: Kagan, B. M. (Doctor of technical sciences); Dolkart, V. M. (Candidate of technical sciences); Novik, G. Kh. (Candidate of technical sciences); Stepanov, V. N. (Engineer); Luk'yanov, L. M. (Engineer); Kanevskiy, M. M. (Engineer); Polyakov, V. N. (Engineer); Tanayev, M. Ya. (Engineer); Yc. K. (Engineer); Kolty*pin, I. S. (Engineer); Ul'yanova, (Engineer); Adas'ko, V. I. (Engineer); Molchanov, V. V. (Engineer); Voitelev, A. I. (Engineer)

TITLE: VNIIEM-1 multipurpose control computer

SOURCE: Elektrotekhnika, 35, no. 7, 1964, 4-10

TOPIC TAGS: digital computer, multipurpose digital computer, control system computer, data reduction system, automatic data reduction system, data processing system

ABSTRACT: The Vsesoyuzny*y nauchno-issledovatel'skiy institut elektromekhaniki (All-Union Scientific Research Institute of Electromechanics) has developed a transistorized multipurpose digital computer and automatic data reduction system, the VNIIEM-1. The VNIIEM-1 comprises: 1) a ferrite-core memory unit which consists of 2048 locations each

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ACCESSION NR: AP4041574

of which carries 35 binary digits; 2) an arithmetic circuit which includes an adder and a multiplier, as well as a trigger register; 3) a unit for controlling the ferrite-core memory unit, location and code-operation trigger registers, control-pulse shaping circuits, clock and command potentials, and auxiliary units for the control of information input and output. The digital computer performs the reduction of information and provides for readout in digital form to the external channels. The VNIIEM-1 computer can be used for the control of various industrial processes. One such computer has been put into trial operation at the "Azovstal'" factory. Orig art. has: 5 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00

ATD PRESS: 3061

ENCL: 00

SUB CODE: DP

NO REF SOV: 000

OTHER: 000

Card 2/2

L 59520-65 EWT(d)/T/EWP(1)/EED-2 Pq-4/Pg-4/Pk-4 IJP(c) BB/GG
ACCESSION NR: AP5015535 UR/0286/65/000/008/0069/0070
681.142.32

AUTHOR: Kagan, B. M.; Dolgart, V. N.; Novik, G. Kh.; Kanevskiy, M. M.; Luk'yanova, L. M.; Stepanov, V. N.; Ul'yanova, N. K.; Koltypin, I. S.; Adas'ko, V. I.; Molchanov, V. V.; Voitelev, A. I.

TITLE: General-purpose digital control computer. Class 42, No. 170218

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 69-70

TOPIC TAGS: computer, control computer, arithmetic unit, adder, core memory, shift register, strobing amplifier, analog digital converter, digital analog converter

ABSTRACT: An Author Certificate has been issued for a digital control computer consisting of an arithmetic unit, magnetic core memory unit, control unit, input/output unit, magnetic tape memory, teletype, perforator, universal converter, and operator console. The system is economical, fast-acting, and reliable due to a number of distinct features incorporated into its design. Economy is achieved by a special arrangement of the adder and the memory unit with its output parity check control. Speed is increased by an asynchronous mode of operation, and a special design of the adder, in which the time necessary for information distribution is kept to a mini-

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L 59520-65

ACCESSION NR: AP5015535

mum. High overall reliability is achieved by a temperature-stabilized, high-speed, disturbance-immune memory unit design. Other reliability features include the absence of interference between the B-register contents and its counter, a longitudinal parity check for the punch tape, an automatic tape misalignment guard, and automatic drift compensation in the multichannel A/D and D/A converters. [BD]

ASSOCIATION: Vsesoyuznyy Ordena trudovogo krasnogo znameni nauchno-issledovatel'skiy institut electromekhaniki (All-Union Scientific Research Institute of Electromechanics)

SUBMITTED: 06Mar64 ENCL: 00 SUB CODE: DP

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4053

Card 2/2

L 39680-66 EWT(d)/EWP(v)/T/EWP(k)/EWP(h)/EWP(l) IJP(c) BB/GG/GD-2/BC
ACC NR: AP6009500 SOURCE CODE: UR/0105/66/000/003/0001/0008

AUTHOR: Kagan, B. M. (Doctor of technical sciences, Professor); Dolkart, V. M. (Candidate of technical sciences); Novik, G. Kh. (Candidate of technical sciences); Kanovskiy, M. M. (Engineer); Stepanov, V. N. (Engineer)

ORG: none

TITLE: Logical design of the VNIIEM-3 control computer

SOURCE: Elektrichestvo, no. 3, 1966, 1-8

TOPIC TAGS: digital computer, computer design, control computer / VNIIEM-3 control computer

ABSTRACT: The logical design of a new VNIIEM-3 universal control digital computer is explained. The computer is intended for complex automation of processes in various industries (metallurgical, chemical, electric-power,

Card 1/2 UDC: 681.142.322

telescopes, etc.). The basic set of the new computer comprises: (1) A central digital computer operating in the real time scale at a rate of 40000 operations per sec; (2) A universal converter with 500 channels capable of analog-to-digital and vice versa signal conversion; (3) A start-stop photo-input device which takes information from a punch tape at a rate of 1000 words per sec and can be interrupted at any syllable; (4) A paper-tape puncher which takes information from the computer at a rate of 20 syllables per sec; (5) An electric typewriter (or teletype) delivering the alphanumerical information; (6) An interruption unit which interrupts the program on an external signal. The form and addressing of numbers, the system of program interruption, the multicomputer operation, the error checking and correction are also explained. Orig. art. has: 5 figures and 2 formulas.

SUB CODE: 09 / SUBM DATE: 31Mar65 / ORIG REF: 002 / OTH REF: 002

L 34855-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) IJP(c) BB/GG/BC

ACC NR: AP6019639 SOURCE CODE: UR/0292/66/000/006/0047/0051

AUTHOR: Dolkart, V. M. (Candidate of technical sciences); Nikolayeva, I. I. (Engineer); Stepanov, V. N. (Engineer); Novik, G. Kh. (Candidate of technical sciences) 17 B

ORG: none

TITLE: Arithmetic unit of a VNIIEM-1 control computer 16 14

SOURCE: Elektrotekhnika, no. 6, 1966, 47-51

TOPIC TAGS: arithmetic unit, control computer, digital computer

ABSTRACT: The high-speed parallel-type arithmetic unit (AU) uses semiconductor devices and consists of four registers: an AU-register proper, a sum register, a quotient-multiplier register, and an auxiliary register. Block diagrams of the AU and the first two registers are shown. The addition and subtraction operations and their completion operations are detailed. The use of only one trigger type accumulator is a distinguishing feature of this AU. Other registers have fixed storage elements. Such a structure permits obtaining a large number of superoperational storage elements with minimum equipment; hence, this structure may prove suitable for multiprogram computers. With a sufficiently high speed of the

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L 34830-66

ACC NR: AP6021804

sensor, an amplifier, and a stabilized power source. To automate the device for an uninterrupted regimen when graphically recording arterial pressure and to ensure resetting prior to measuring the maximum necessary pressure in the cuff, an adjustable followup circuit has been added, equipped with a potentiometric pressure sensor. The potentiometer wiper is connected to the collector circuit of an emitter follower and kipp relay (see Fig. 1). Orig. art. has: 1 figure. [CD]

SUB CODE: 06/ SUBM DATE: 28Jan65/ ATD PRESS: 5082

Card 2/2

21 (8)

AUTHORS: Barashenkov, V. S., Belyakov, V. A., Van Shu-fen', Glagolev, V. V., Dolkhazhav, N., Kirillova, L. F., Lebedev, R. M., Mal'tsev, V. M., Marov, P. K., Tolstov, K. D., Tsyganov, E. N., Shafranova, M. G., Mao Ch'ing-hsieh

SOV/89-7-4-12/28

TITLE: The Interaction of Fast Nucleons With Nuclei of the Photoemulsion NIKFI-R

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 4, pp 376-377 (USSR)

ABSTRACT: The present paper deals with the interaction between 9 Bev-protons, which were accelerated in the beam of the synchrophasotron of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research), and the nuclei of a photoemulsion of the NIKFI-R type. The results of these measurements are shown by a table. On the basis of the data thus found it is possible to draw several conclusions as to the mechanism of the interaction between a fast proton and a nucleus. If the primary nucleon-nucleus collision is an interaction between nucleon and channel, the velocity of the center of mass in an interaction of silver and bromine with the channel will be considerably less than in an interaction with light nuclei. Therefore, also the number of s-particles

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must be considerably greater. In the experiment, the numbers of s-particles for light and heavy nuclei are, however, nearly the same. This is explainable on the basis of the cascade mechanism of interaction, in which the energy of the s-particles decreases rapidly in cascade collisions. The multiplicity of the particles produced decreases simultaneously. In the case of the greater number of g-particles, nucleons are concerned, which may be explained by the cascade mechanism of nucleon - nucleus interaction. Also the agreement between the transversal momentum p_{g-p} for g-protons originating from interactions with light and heavy nuclei points in the direction of the interaction cascade mechanism. Besides, a search was made for strange particles by employing the method of investigating according to areas. The cross section of the production of k^+-particles with an energy of $E \leqslant 140$ Mev in a medium-weight nucleus of the photoemulsion amounts to $(5 \pm 2)10^{-27}$ cm^2. Besides, the amount of the production cross section, the wide angular distribution of the k-mesons, as well as other facts indicate that a noticeable fraction of

slow strange particles is produced in an intranuclear cascade process. Furthermore, the medium-weight energy losses of a fast nucleon are evaluated in the case of a single nucleon-nucleon collision. A 9Bev-proton gives up an average of (5.1 ± 0.8) Bev to a medium-weight nucleus of the photoemulsion, which amounts to (60 ± 10) % of its initial energy. 4.05 Bev are used for the production of pions, and 1.05 Bev are transferred to the nucleons of the nucleus. As a proton in an medium-weight nucleus undergoes approximately 2 collisions, the proton, in one single nucleon-nucleon collision, loses $\Delta E = 35 \pm 10$ % of its initial energy. By means of other measurements of the pion energy spectrum carried out independently of the present paper in a nucleon-nucleus collision $\Delta E = 40 \pm 10$ % is obtained. The statistical theory of multiple production furnishes $\Delta E = (40 - 50)$ %. The authors thank G. Beznogikh, V. Vaksina, Z. Kuznetsova, and N. Metkina for their help in the measurements, and L. Popova for his assistance in analyzing measuring results. There are 1 table and 1 reference.

DOLKOWSKI, H.

"Improvements and Investments in Pond Economy." p. 3, (GOSPODARKA RYBNA, Vol. 6, No. 3, Mar. 1954. Warszawa, Poland.)

SO: Monthly List of East European Accession, (EEAL), LC, Vol. 3, No. 12, Dec. 1954, Uncl.

POLAND

TUROWSKI, Gabriel; and DOLLAR, Barbara; Plant of Sera and Vaccines of the National Institute of Hygiene (Wytworna Surowic i Szczepionek) Krakow

"Investigations on the Chemical Composition of Bordetella Pertussis Lipopolysaccharides in Relation to the Culture Period"

Warsaw, Medycyna Doswiadczalna Mikrobiologia, Vol 18, No 4, 1966; p. 353-359

Abstract [English summary modified]: Study of growth of cell yield and density, agglutinogenic properties and other parameters during 10 days' incubation of Bordetella pertussis strain 134. The chemical composition of lipopolysaccharides was determined; polysaccharides, lipids, nucleic acids, hexoses, phosphates and nitrogen. Authors found a relationship between agglutinogenic properties and the chemical composition, especially lipopolysaccharide content, in cells on different days of culture. 5 diagrams, 2 tables; 6 Polish, 7 Western references.

1/1

[redacted], Attila; ZAGYVAI, Istvan

Changes in the chemical composition of fur leathers during the drenching process. Bor cipo 14 no. 2:58-59 Mr '64.

1. Pannonia Fur Factory, Budapest (for Bolle). 2. Budapest Technical University (for Zagyvai).

DOLLS, Attila; ZAGYVAI, Istvan; KELLER, Maria

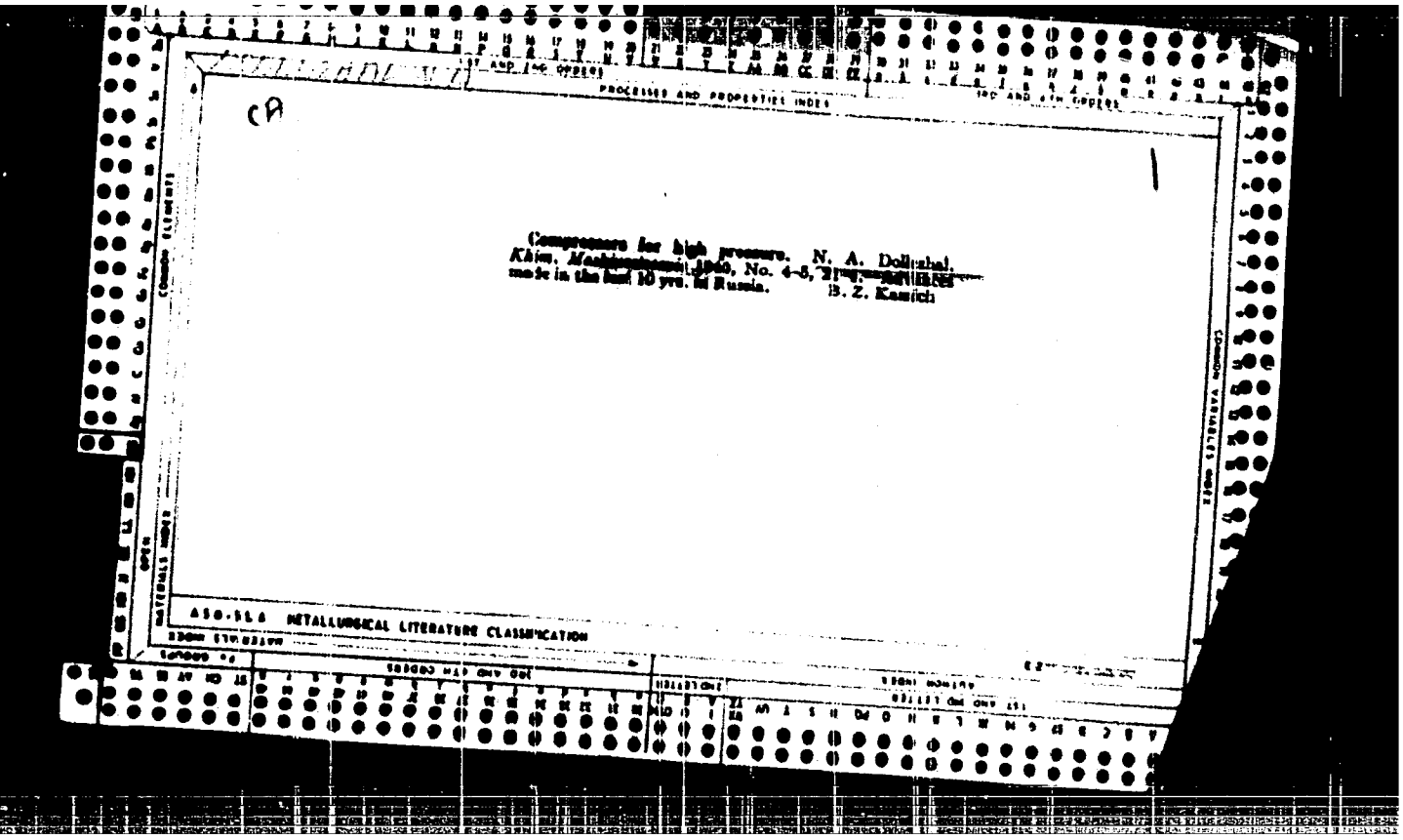
Changes in the chemical composition of pelts during their steeping. Pt. 2. Bor cipo 14 no.4:[illegible] Ap '64.

1. Pannonia Fur Factory (for Dolls). 2. Kalapesi Technical University (for Zagyvai). 3. National Institute of Plastics and Paper Industry (for Keller).

DOLLE, L.

Application of sulfonamides in tablets. Prakt. lek., Praha 31 no. 4:85-87 20 Feb 1951. (CLML 22:3)

1. Of Pediatric Clinic (Head--Ferdinand Demant, M. D., Assistant--Ludovitt Dolle, M. D.).



1. DOLLEZHAL, N. A.

2. USSR (600)

4. Technology

7. Computation and design of chemical apparatus and machines. Collected articles. Moskva, 1951

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

DOLLEZHAL', N.A.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 589 - I

BOOK

Call No.: TA407.M65

Author: DOLLEZHAL', N. A., Prof. Dr. of Tech. Sci., Laurate of the Stalin Priz., ed.

Full Title: CORROSION AND CHEMICAL RESISTANCE OF MATERIALS. MANUAL

Transliterated Title: Korrozionnaya i khimicheskaya stoykost' materialov. Spravochnik

PUBLISHING DATA

Originating Agency: Ministry of Machine Building of the USSR. Main Administration of Chemical Machine Building. All-Union Scientific Research and Construction Institute of Chemical Machine Building (NIIKhIMMASh)

Publishing House: State Scientific and Technical Publishing House for Machine-Building and Shipbuilding Literature

Date: 1954 No. pp.: 570 No. of copies: 7,000

Editorial Staff

Editor: Makhneyev, T. A., Eng. Editor-in-Chief: Itkin, I. M., Eng.

Others: This manual was compiled by Dyatlova, V. N., Eng. and Zolotnitskiy, I. M., Kand. of Tech. Sci. of the staff of "NIIKhIMMASh"

PURPOSE: This manual is intended for engineers and technical workers in construction and technical sections of industrial establishments,

for project organizations and for students and teachers of institutions of higher learning.

TEXT DATA

Coverage: This manual brings data on the chemical composition and corrosion resistance of more than 500 metals and alloys, and on the physicochemical properties and chemical resistance of more than 100 nonmetallic materials in contact with 320 different media. The first part deals with metals and alloys. A list of 525 metals and alloys with specification as to their composition precedes tables which give data of corrosion rates in various media expressed in gr/m^2 per hour and mm/year. The conditions in which the metals and alloys were tested are specified, namely the time of exposures, their temperatures and the attacking media concentrations. Most data have been taken from the German corrosion tables of F. Ritter Korrosionstabellen metallischer Werkstoffe, although not from the latest edition, the third (1952), but from the second (1944). The second part deals with electrochemical corrosion when two metals or alloys are present in an electrolyte. In tabular form the electrochemical corrosion of different metal combinations in various electrolytes are compared. The third part treats the nonmetallic materials, in-

Korrozionnaya i khimicheskaya stoykost' materialov. Spravochnik

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organic and organic. The first chapter describes physical and chemical characteristics of each of these 103 materials and briefly outlines their applications. The second chapter indicates in tabular form, the resistance of those materials against different chemicals under various specified conditions of temperature, condensation of acting chemical agents and time of exposure. An appendix briefly outlines the technology of coating with nonmetallic materials. This is a comprehensive and valuable reference tool on chemical and electrochemical resistance of metals, alloys and nonmetallic materials, based on an extensive literature, Russian and foreign.

No. of References: 183 Russian, 1929-1952; 60 non-Russian, 1925-1950.
Facilities: None

DOLLEZHAL', N.A.

Category : USSR/Nuclear Physics - Nuclear Engineering and Power C-8

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6104

Author : Blokhintsev, D.I., Dollezhal', N.A., Krasin, A.K.
Title : Reactor of the Atomic Electric Station of the Academy of Sciences of the USSR.

Orig Pub : Atom. energiya, 1956, No 1, 10-23

Abstract : The thermal power of the reactor is 30,000 kw, and the electric power is 5,000 kw. The amount of uranium charge is 550 kg, representing 27.5 kg U^{235} at a 5% enrichment. The moderator and reflector are made of graphite, and the coolant is ordinary distilled water. The thermal flux reaches 1.8×10^6 kcal-m^{-2}-hr^{-1}. The shield comprises a layer of water 100 cm thick and 3 meters of concrete. The graphite core of the reactor is three meters in diameter and 4.6 meters high. The central section contains 157 vertical holes at a spacing of 120 mm. 128 holes are occupied by the working elements, and the remainder are intended for the control rods and for auxiliary purposes. The diameter of the active zone is 1500 mm, the height is 1700 mm. Tubular uranium fuel elements are used in the reactor. The

Card : 1/2

DOLLEZHAL, N. A.

Distr: 4E3c 2 cys/4E2b(v)

1/ Uranium-graphite power reactors with superheated steam. N. A. Dollezhal. *Atomnaya energiya* 3, 325-30 (1957).—An economic analysis of the factors governing the installation and operation of a nuclear reactor to produce elec. power is given. Since one of the ways of improving the economic factors is to obtain steam at high temp. and pressure, a proposed power reactor is described in which primary steam is produced directly in the reactor, and the secondary steam, which drives the turbine, is superheated to 510° and 90 atm. in a loop in the reactor. The radioactivity of the secondary steam is low. The fuel is slightly enriched U, the moderator and reflector are graphite, the elec. power is 100 Mw., and the thermal efficiency is 35-8%. The cost of elec. power will not exceed that from coal-burning plants.
H. Newcombe

2 1-RS 3

Dollezhal', N. A.

89-11-3/9

AUTHOR: Dollezhal', N. A.

TITLE: Uranium-Graphite Reactors with Superheated Steam for Electric Power Stations (Uran-grafitovyye reaktory elektrostantsiy s peregrevom para)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 11, pp. 391-397, (USSR)

ABSTRACT: After an introductory explanation of the connections existing in the economical price formation of an atomic power station one of the stations being constructed is described as a good solution: It is stated as peculiarity that in the uranium-graphite reactor the water as heat carrier in the working channels is as well vaporized as superheated. The VK-100 turbine which needs steam of 90 atmospheres absolute pressure and 500°C. The fuel elements in the fuel channels serve as heat source. One part of these channels is cooled by boiling water (T_1), the other one by steam superheated to a certain temperature (T_2). The secondary steam with 110 atmospheres absolute pressure obtained in the heat exchanger is conducted into the channels T_2 where it is superheated to 510°C and with 90 at. absolute pressure conducted to the turbine. By this arrangement the efficiency of these atomic power station is increased to 35--38%. The use of superheated steam was decided after the following facts had experimentally and by calculations been determined: a) The steam superheated in the reactor becomes only extremely weakly active as soon as its salt content is smaller than 0,05mg/kg

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Uranium-Graphite Reactors with Superheated Steam for Electric Power Stations. 89-11-3/9

b) Therefore, even if all radioactive particles condensed in the turbine, it would still be less active than the standards permit. c) In the case that 1% of the total weight of water existing in the radioactive circulation would come into the reactor halls through untight places, the concentration of radioactive aerosols existing there still lies below the permitted standard. The short characteristic of the atomic station bing constructed is as follows:

heat power	285 MW
electric output	1oo MW
moderator and reflector	graphite
heat carrier	water and steam
steam consumption	4o5 t/h
steam temperature before the turbine	5oo°C
steam pressure before the turbine	99 at. absolute pressure
efficiency of steam-outlet system	35-38%

Fig 4 shows a detailed design of an electric station with an uranium-graphite reactor. There are 4 figures and 3 Slavic references.

Card 2/2

AVAILABLE: Library of Congress.

SOV/89-5-3-2/15

AUTHORS: Dollezhal', N. A., Krasin, A. K., Aleshchenkov, P. I., Grigor'yants, A. N., Florinskiy, B. V., Minashin, M. Ye., Yemel'yanov, I. Ya., Kugushev, N. M., Sharapov, V. N., Mityayev, Yu. I., Galanin, A. N.

TITLE: A Uranium-Graphite Reactor With Superheating of Steam of High Pressure. I (Uran-grafitovyy reaktor s peregrevom para vysokogo davleniya)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 3, pp. 223-233 (USSR)

ABSTRACT: The 400 MW plant is equipped with 4 uranium-graphite reactors. A reactor and a steam turbine of 100 MW together form a closed block. A number of investigations was carried out for the purpose of checking the individual parts of this block. The following results were obtained:
1) With a thermal flux of $\sim 1.10^6$ kcal/m^2h the steam content by weight at the outlet attains a value of up to 20%.

2) Several hundred hours' uninterrupted operation of a channel in the boiling stage did not disrupt the channel.
3) The activity of the steam condenser was found to be 10 times

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A Uranium-Graphite Reactor With Superheating of Steam of High Pressure. I

lower than that of the water in the separator.
4) If the content of steam in the steam-water mixture attains 15 - 20%, a pulsation of the consumption of the mixture occurs. From the moment at which the steam mixture passes from the separator into the turbine, pulsation stops and does not occur again in the course of a further increase of the steam phase.
5) During the initial development of the waterlevel in the separator the temperature in the fuel channels fluctuates considerably. As soon as stable conditions are established, these fluctuations cease.
6) The steam-water mixture was not found to be delayed in any of the channels.

From a plurality of varieties the best scheme for the production of superheated steam was selected (see figures). The turbo-generator BK-100 operates with a steam of 90 atm and a temperature of 480 - 535° C.

The following are the physical characteristics of the reactor:

Thermal output	285 MW
Electrical output	100 MW
Average cycle	730 days
Uranium charge	90 tons

A Uranium-Graphite Reactor With Superheating of Steam of High Pressure. I

Uranium enrichment at the beginning of a cycle	1,3 %
Uranium enrichment at the end of a cycle	1,03 %
Breeding ratio at the beginning of a cycle	65 %
Breeding ratio at the end of a cycle	55 %
Amount of U-235 burned-up during a cycle	243 kg
Amount of Pu-239 burned-up during a cycle	55 kg
Amount of Pu-239 and Pu-241 at the end of a cycle	132 kg
Excess reactivity for temperature effect	0,040
Excess reactivity for poisoning	0,015
Excess reactivity for the fuel burn-up and long-lived fission fragments	0,025
Total excess reactivity	0,080

There are 8 figures.

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AUTHORS: Dollezhal', N. A., Krasin, A. K., Aleshchenkov, P. I., Grigoryants, A. N., Florinskiy, B. V., Minashin, M. Ye., Yemel'yanov, I. Ya., Kugushev, N. M., Sharapov, V. N., Mityayev, Yu. I., Galanin, A. N. SOV/89-5-3-3/15

TITLE: A Uranium-Graphite Reactor With Superheating of Steam of High Pressure. II (Uran-grafitovyy reaktor s peregrevom para vysokogo davleniya) (Continued from abstract 2/15)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 3, pp. 233-244 (USSR)

ABSTRACT: The graphite mantle of the reactor (diameter 9,6 m, height 9 m) is built into a cylindrical steel container. The container is filled with nitrogen in order to prevent burn-up of the graphite. The active zone of the reactor has a diameter of 7,2 m and a height of 6 m. As a lateral reflector graphite of 0,8 m thickness is used. Graphite of 1 m thickness is used as upper reflector, and above it a layer of cast iron having a thickness of 0,5 m is fitted. Together, these components serve as the main portion of the / upper biological shield. Graphite of 0,6 m thickness is used as lower reflector. In the graphite structure openings for 1134 channels are provided. 730 of them are provided with fuel el-

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ments which are cooled by means of boiling water and contain up to 33% percentage by weight of steam at the output. 266 channels are cooled by steam which is heated up to the corresponding turbine temperature. Six channels contain the automatic regulating rods, 78 channels are provided for the compensation rods, and 16 for the shim rods. The ionization chambers and counting tubes are located in 36 channels. The fuel channels, the regulating- and shim rods as well as the arrangement of the channels in the active zone are shown in form of drawings. The circuit diagram for the reactor turbine shows the connection between the reactor, the two-stage turbine, two condensers, a system of additional heating of the feed-water, a de-aerator (6 atm), 2 preheaters (for high pressure), condensation- and feed pumps. The water is conveyed into the boiling channels by way of two centrifugal pumps. When entering these channels the water has a temperature of 300° C and a pressure of 155 atm. The mixture of steam and water formed in these channels reaches the separator, where steam and water are separated. From here the water is conveyed to the preheater of the steam generator (which consists of 2 parts), where it is cooled from the saturation temperature of 340° C (pressure in the sep-

A Uranium-Graphite Reactor With Superheating of Steam of High Pressure.II

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...ater 150 atm) down to 300° C. Heat is transferred to the ...ed-water of the secondary circuit. The water of this circuit is in the first section of the preheater brought from a temperature of 215° C to saturation temperature, which corresponds to a pressure of 110 atm. In the second part it is evaporized until the quantity of steam corresponding to weight attains 20%. The secondary steam produced in the steam generator is led in to the steam channels of the reactor, where it is heated up to a temperature of 510° C. The steam reaches the turbine with a pressure of 90 atm and a temperature of 500° C. The main building of the electric power plant consists of 4 parts arranged one behind the other, the machine hall, the operation rooms, the de-aerator, and the reactor hall. For an average cycle of 730 days it is shown by calculation that the cost of atomic kWh are equal to the kWh obtained by means of the usual fuels. Fuel costs amount to from 30 to 40% of the total costs. If the fuel channels and fuel elements operate in a stable manner, it can be proved that by a slight increase of the degree of enrichment in uranium the average cycle can be increased, which leads to a reduction of costs. There are 9 figures and 1 table.

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DOLLEZHAL', N.A.

21(4) P.2 PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Engergy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.F. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful

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use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

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PART I. NUCLEAR POWER ENGINEERING

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DOLLEZSAL, N.A. [Dollezhal, N.A.]; KRASZIN, A.K. [Krasin, A.K.]; GALANYIN, N.A. [Galanin, N.A.]; ALESCSENKOV, P.I. [Aleshchenkov, P.I.]; GRIGORJANC, A.N. [Grigoryants, A.N.]; JEMELJANOV, I.Ja. [Yemelyanov, I.Ya.]; KUGUSEV, N.M. [Kuznetsov, N.M.]; MINASIN, M.E.; MITYAJEV, U.I. [Mityayev, U.I.]; FLORINSZKIJ, B.V. [Florinskiy, B.V.]; SARAPOV, B.N. [Sharapov, B.N.]; ILLY, Jozsef [translator]

Superheated high-pressure steam producing uranium - graphite reactor. Atom taj 2 no.1:1-47 Ja '59.

21 (9)

AUTHORS: Dollezhal', N. A., Grasin, A. K. SOV/89-7-1-1/26

TITLE: Five Years of Nuclear Power Engineering (Pyat' let yadernoy energetiki)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 1, pp 5 - 10 (USSR)

ABSTRACT: On June 27 of this year it was 5 years since the first Russian atomic power plant took up operation. The very flexible construction of the reactor made it possible within that time to carry out a number of large-scale experiments, which are of decisive importance for the further development of large Soviet atomic power stations. Of the series of published papers (Refs 1-6) several problems deserve special mention. Thus, it was possible to show that under certain conditions graphite is able to stand temperatures of 700 - 750°C also over long periods. On the basis of individual experiments it was possible to show it to be possible to produce overheated steam immediately in the reactor. This knowledge was utilized especially for the construction of the Ural station. The operational safety of pressure tubes was found to be far superior to that of a single vessel. By means of lengthy investigations it was found that a burn up of 10,000 Mw.d/t may easily be attained by means of the

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fuel elements used in the first power plant, and that with individual fuel elements burn up values of up to 30,000 Mw.d/t could be attained. By means of these experiments it was also possible to show after what times the individual reactor zones must be re-charged, and to find out whether this re-charging may be effected under load or when the reactor is shut off. Particular importance must be attached to what has been learned with respect to the safety of the reactor. It was found to be correct to build this reactor type without a special steel- or concrete container, because in the case of a major accident no particular danger can arise. Special experiments, in which individual fuel elements were destroyed, showed that the manner of construction employed in the case of the first atomic power station entailed no danger for the population living in the neighborhood or for the adjoining territory. In the course of the 5 years of continuous operation, A. N. Grigor'yants, G. N. Ushakov, L. A. Kochetkov, V. T. Lytkin and others distinguished themselves particularly. There are 2 figures and 16 references, 7 of which are Soviet.

SUBMITTED: April 27, 1959
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S/089/60/008/06/01/021
B006/B063 82302

21.1910

AUTHORS: Feynberg, S. M., Konobeyevskiy, S. T., Dollezhal', N. A., Yemel'yanov, I. Ya., Tsykanov, V. A., Bulkin, Yu. M., Zhirnov, A. D., Filippov, A. G., Shchipakin, O. L., Perfil'yev, V. P., Samoylov, A. G., Ageyenkov, V. I.

TITLE: The CM(SM) Research Reactor With a Capacity of 50 Mw

PERIODICAL: Atomnaya energiya, 1960, Vol. 8, No. 6, pp. 493-504

TEXT: The present article gives a detailed description of the Russian 50-Mw research reactor which has a neutron flux of $2.2 \cdot 10^{15}$ n/cm^{2}sec. It is used both for research work in nuclear physics and reactor engineering; obtaining of new transuranic elements, testing of fission and building materials under neutron and gamma bombardment, within the temperature range 20°K - 2000°C, and in various media; spectrometric examination of intermediate neutrons; examination of the gamma spectrum of the (n,γ) reaction; examination of short-lived isotopes and neutron diffraction analyses. The authors first discuss some characteristic data.

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The CM(SM) Research Reactor With a Capacity of 50 Mw

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The water-cooled, reflected reactor works with U^{235} enriched to 90%. The critical mass (without the experimental holes) is 7.3 kg of U^{235}, and including the experimental holes, it amounts to 9.5 kg (loading: ~11.7 kg). The maximum heat flow from the fuel element attains $5.5 \cdot 10^6$ kcal/m^2.h; the surface temperature does not exceed 195°C. Fig. 1 shows the distribution of the neutron flux in the cross section of the reactor; the flux has two maxima, one in the center of the cooling-water cavity ($2.2 \cdot 10^{15}$), and the other in the lateral reflector (5.10^{14} n/cm^2sec). The flux/power ratio is $4.4 \cdot 10^{10}$ n/cm^2.sec.kw. With a 25% submersion depth of the fuel elements, the reactor can be in continuous operation for a period of 60-65 days. Several details are dealt with next. Experimental holes: The reactor has five horizontal and fifteen vertical holes. The horizontal ones are in the central part of the active zone, whose longitudinal and cross sections are shown in Figs. 2,3. At the output of the holes the neutron flux amounts to ~3.10^{10} n/cm^2sec. The vertical holes are located in the reflector with the exception of the central ones. Three of them serve for obtaining transuranic elements (one of these being in the center), two low-temperature holes serve for metal

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tests, two high-temperature holes for the testing of fuel elements, chemical analyses of the cooling water, and corrosion tests. All of these holes are water-cooled. Furthermore, five gas-cooled holes serve for testing fission and building materials in the range of 0 - 600°C; one hole (cooled with helium gas or liquid H_2) serves for material tests at low temperatures; one gas-cooled hole for material tests at ~2000°C; one hole cooled with liquid metal (1000°C) for testing fuel elements and coolants. Construction: The following demands were made on construction: creation of a small active zone that would withstand high thermal loads for a long time, and its cooling; application of a maximum number of experimental holes (their distribution is shown in Fig. 3); possible exchange of fuel assemblies without pressure drop. Figs. 2-5 illustrate particulars of the construction. Reactor body and cover: Fig. 2 is described. The cylindrical part is made of 36 mm thick stainless steel of the grade 1Kh18N9T (1Kh18N9T). The reflector consists basically of beryllium oxide; it is made up of blocks comprising about 65 different types, which are enclosed by steel plates on top and at the bottom. Fuel element assemblies: The element itself has the shape of a plate with a

The CM(SM) Research Reactor With a Capacity of 50 Mw

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core, pressed from uranium oxide powder and electrolytic nickel; the core is contained in a nickel can. Fig. 6 shows a section through the assembly, Fig. 7 another through a fuel element. Data of one such element are compiled; every element contains 12.5 g U^{235}. The cylindrical body shield (Fig. 2) divides the inner reactor cavity into two zones. The functions of this shield are briefly discussed, and the cooling water circulation is described next. The control system is described in greater detail. This system consists of two automatic regulators with two regulation rods each, four shim rods, and four safety rods which can also be used as shim rods. The automatic regulation is operated by 13 ionization chambers located outside the reactor body; it covers the power range from 0.5 to 100%. Several details concerning safety and shim rods are thoroughly discussed. Reactor shield: Fig. 8 shows a cross section through reactor plus shield. The latter consists of steel and heavy concrete. A few details are described, and the process of fuel extraction is briefly dealt with. The cooling system is finally discussed. It consists of four closed, separate loops. The water is kept flowing by circulating pumps (500 t/h, 10 atm); the heat exchange power is 15 Mw.

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The CM(SM) Research Reactor With a Capacity of 50 Mw

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There are 8 figures and 1 Soviet reference.

SUBMITTED: March 15, 1960

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DOLLEZHAL, N. A. et al.

"Graphite-Uranium Power Reactor with Direct Feeding of Steem into the Turbines."

report submitted for the IAEA Symposium on Power Reactor Experiments, Vienna, Austria, 23-27 Oct 1961.

ARTSIMOVICH, L.A., akademik; DOLLEZHAL', N.A., akademik; KIRILLIN, V.A., akad.; MILLIONSHCHIKOV, M.D., akademik; POPKOV, V.I.; FRUMKIN, A.N., akademik

[Power engineering of the future; the second discussion] Energetika budushchego; beseda vtoraia. [By] L.A. Artsimovich i dr. Moskva, Izd-vo "Znanie," 1964. 54 p. (Novoe v zhizni, nauke, tekhnike. Seriia IX: Fizika, matematika, astronomiia, no.11) (MIRA 17:6)

1. Chlen-korrespondent AN SSSR (for Popkov).

DOLLEZHAL, N. A.; ALESHCHENKOV, P. I.; YEMELYANOV, I. Ya.; ZHIRNOV, A. D.; ZVEREVA, G. A.; MORGUNOV, N. G.; KRYUKOV, K. A.; MITYAYEV, Yu. I.; KNYAZEVA, G. D.

"Development of superheating power reactors of Beloyarsk nuclear power station (BAES) type."

report submitted for 3rd Intl Cong, Peaceful Uses of Atomic Energy, Geneva, 31 Aug-9 Sep 64.

L 20048-65 EPF(c)/EPF(n)-2/EPR/EWT(m) Pr-4/Ps-4/Pu-4 SSD/AFWL DM
ACCESSION NR: AP4049533 S/0089/64/017/005/0335/0344

AUTHORS: Dollezhal', N. A.; Yemel'yanov, I. Ya.; Aleshchenkov, P. I.; Zhirnov, A. D.; Zvereva, G. A.; Morgunov, N. G.; Mityayev, Yu. I.; Knyazeva, G. D.; Kryukov, K. A.; Smolin, V. N.; Lunina, L. I.; Kononov, V. I.; Petrov, V. A.

TITLE: Development of Power reactors of the type used in the Beloyarsk Atomic Station with nuclear steam superheat

SOURCE: Atomnaya energiya, v. 17, no. 5, 1964, 335-344

TOPIC TAGS: reactor feasibility study, reactor fuel element, reactor power, reactor coolant

ABSTRACT: After stating that a desirable trend in the development of reactor construction is towards larger per unit power ratings, which call for larger turbine steam pressures and temperatures, the authors discuss the feasibility of further development of uranium-

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graphite reactors of the channel type, such as are used in the Beloyarsk atomic electric station, with nuclear superheating of the steam. The rating has been increased to 200 MW by changing over from two-loop to single-loop operation and by modifying the working channels. The use of trans-critical parameters will improve the heat transfer and hydrodynamics of the coolant flow and, together with the use of single-pass construction will make ratings of 800--1000 MW possible. Burnup rates of 40--45 thousand MW-day are projected with 5% enrichment. Other topics discussed are possible interchangeability of fuel elements, optimal fuel element construction, optimal channel arrangement, and possible improvements in the neutron balance and distribution. Orig. art. has: 8 figures and 3 tables.

ASSOCIATION: None

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ACCESSION NR: AP4049533

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NR REF SOV: 004

OTHER: 001

Card 3/3

L 24214-65 EWT(m)/EPF(c)/EPF(n)-2/EPR Pr-4/Pu-4/Pu-4 DM

ACCESSION NR: AP5001267 S/0089/64/017/006/0452/0463

AUTHOR: Feynberg, S. M.; Dollezhal', N. A.; Vorob'yev, Ye. D.; Tsykanov, V. A.; Yemel'yanov, I. Ya.; Gryazev, V. M.; Kochenov, A. S.; Bulkin, Yu. M.; Ageyenkov, V. I.; Aver'yanov, P. G.

TITLE: Physical and exploitational characteristics of the SM-2 reactor 19

SOURCE: Atomnaya energiya, v. 17, no. 6, 1964, 452-463

TOPIC TAGS: research reactor, reactor/SM-2 reactor characteristic, nuclear reactor

ABSTRACT: The paper is a summary of the USSR # 320 report at the International Conference on Peaceful Uses of Atomic Energy in Geneva, 1964. The reactor SM-2 was designed for a wide range of investigations in nuclear physics, solid state physics, metallurgy, radiation chemistry, physics and technology of nuclear reactor construction, and other fields of science and technology. The reactor was described in Atomnaya Energiya 8, 493 (1960). The thermal neutron flux is 3.5×10^{15} n/cm^2. sec at 50,000 kw. The fast neutron flux with energy larger

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